

APPENDIX I

GLOSSARY

ACCELERATING ANODE—An electrode charged several thousand volts positive and used to accelerate electrons toward the front of a cathode-ray tube.

ACORN TUBE—A very small tube with closely spaced electrodes and no base. The tube is connected to its circuits by short wire pins that are sealed in a glass or ceramic envelope. The acorn tube is used in low-power uhf circuits.

AMPLIFICATION—The ratio of output magnitude to input magnitude in a device intended to produce an output that is an enlarged reproduction of its input.

AMPLIFICATION FACTOR—The voltage gain of an amplifier with no load on the output.

AMPLITUDE DISTORTION—Distortion that is present in an amplifier when the amplitude of the output signal fails to follow exactly any increase or decrease in the amplitude of the input signal.

AMPERITE (BALLAST) TUBE—A current-controlling resistance device designed to maintain substantially constant current over a specified range of variation in applied voltage or resistance of a series circuit.

ANODE—A positive electrode of an electrochemical device (such as a primary or secondary electric cell) toward which the negative ions are drawn.

AQUADAG COATING—A special coating of a conductive material, such as graphite, which is applied to the inside of a CRT. This coating eliminates the effects of secondary emission and aids in the acceleration of electrons.

BEAM-POWER TUBE—An electron tube in which the grids are aligned with the control grid. Special beam-forming plates are used to concentrate the electron stream into a beam. Because of this action, the beam-power tube has high power-handling capabilities.

BRIGHTNESS CONTROL—The name given to the potentiometer used to vary the potential applied to the control grid of a CRT.

CATHODE—The general name for any negative electrode.

CATHODE BIAS—The method of biasing a vacuum tube by placing the biasing resistor in the common-cathode return circuit, thereby making the cathode more positive with respect to ground.

CATHODE-RAY TUBE (CRT)—An electron tube that has an electron gun, a deflection system, and a screen. This tube is used to display visual electronic signals.

CHOKE—An inductor used to impede the flow of pulsating dc or ac by means of self-inductance.

COLD-CATHODE TUBE—A gas-filled electron tube that conducts without the use of filaments. Cold-cathode tubes are used as voltage regulators.

CONTROL GRID—The electrode of a vacuum tube, other than a diode, upon which a signal voltage is impressed to regulate the plate current.

DEFLECTION PLATES—Two pairs of parallel electrodes, one pair set forward of the other and at right angles to each other, parallel to the axis of the electron stream within an electrostatic cathode-ray tube.

DEIONIZATION POTENTIAL—The potential at which ionization of the gas within a gas-filled tube ceases and conduction stops, also referred to as extinction potential.

DIFFERENCE OF POTENTIAL—The voltage existing between two points. It will result in the flow of electrons whenever a circuit is established between the two points.

DIODE—An electron tube containing two electrode, a cathode, and a plate.

DIRECTLY HEATED CATHODE—A wire, or filament, designed to emit electrons that flow from cathode to plate. This is done by passing a current through the filament; the current heats the filament to the point where electrons are emitted.

DISTORTION—An undesired change in the waveform of the original signal, resulting in an unfaithful reproduction of audio or video signals.

DOORKNOB TUBE—An electron tube that is similar to the acorn tube but larger. The doorknob tube is designed to operate (at high power) in the uhf frequencies.

E_p - I_p CURV—The characteristic curve of an electron tube used to graphically depict the relationship between plate voltage (E_p) and the plate current (I_p).

EDISON EFFECT—Also called Richardson Effect. The phenomenon wherein electrons emitted from a heated element within a vacuum tube will flow to a second element that is connected to a positive potential.

ELECTRON GUN—An electrode of a CRT that is equivalent to the cathode and control grid of conventional tubes. The electron gun produces a highly concentrated stream of electrons.

ELECTROSTATIC DEFLECTION—The method of deflecting an electron beam by passing it between parallel charged plates mounted inside a cathode-ray tube.

FILAMENT—The cathode of a thermionic tube, usually a wire or ribbon, which is heated by passing current through it.

FILTER—A selective network of resistors, capacitors, and inductors that offer comparatively little opposition to certain frequencies or to direct current, while blocking or attenuating other frequencies.

FIXED BIAS—A constant value of bias voltage.

FLEMING VALVE—An earlier name for a diode, or a two-electrode vacuum tube used as a detector.

FOCUSING ANODE—An electrode of a CRT that is used to focus the electrons into a tight beam.

FULL-WAVE RECTIFIER—A circuit that uses both positive and negative alternations in an alternating current to produce direct current.

GETTER—An alkali metal introduced into a vacuum tube during manufacture. It is fired after the tube has been evacuated to react chemically with (and eliminate) any remaining gases.

GRID BIAS—A constant potential applied between the grid and cathode of a vacuum tube to establish an operating point.

GRID CURRENT—The current that flows in the grid-to-cathode circuit of a vacuum tube.

GRID-LEAK BIAS—A high resistance connected across the grid capacitor or between the grid and cathode. It provides a dc path to limit the accumulation of a charge on the grid.

HALF-WAVE RECTIFIER—A rectifier using only one-half of each cycle to change ac to pulsating dc.

HEATER—Same as a filament.

HORIZONTAL-DEFLECTION PLATES—A pair of parallel electrodes in a CRT that moves the electron beam from side to side.

IMPLOSION—The inward bursting of a CRT due to high vacuum. The opposite of explosion.

INDIRECTLY HEATED CATHODE—Same as a directly heated cathode with one exception: The hot filament raises the temperature of the sleeve around the filament; the sleeve then becomes the electron emitter.

INTERELECTRODE CAPACITANCE—The capacitance between one electron-tube electrode and the next electrode toward the anode.

IONIZATION—The electrically charged particles produced by high energy radiation, such as light or ultraviolet rays, or by the collision of particles during thermal agitation.

IONIZATION POINT—The potential required to ionize the gas of a gas-filled tube. Sometimes called firing point.

LIGHTHOUSE TUBE—An electron tube shaped like a lighthouse, is designed to handle large amounts of power at uhf frequencies.

LINEAR—Having an output that varies in direct proportion to the input.

MULTI-ELECTRODE TUBE—An electron tube that is normally classified according to the number of grids. (The multi-electrode tube contains more than three grids).

MULTI-UNIT TUBE—An electron tube containing two or more units within the same envelope. The multi-unit tube is capable of operating as a single-unit tube or as separate tubes.

NONLINEAR—Having an output that does not rise or fall directly with the input.

OILCAN TUBE—A type of planar tube, similar to the lighthouse tube, which has cooling fins. The oilcan tube is designed to handle large amounts of power at uhf frequencies.

PEAK CURRENT—The maximum current that flows during a complete cycle.

PEAK-REVERSE VOLTAGE—The peak ac voltage which a rectifier tube will withstand in the reverse direction.

PEAK VOLTAGE—The maximum value present in a varying or alternating voltage. This may be positive or negative.

PENTODE TUBE—A five-electrode electron tube containing a plate, a cathode, a control grid, and two grids.

PERSISTENCE—The duration of time a display remains on the face of a CRT.

PHOSPHOR—The material used to convert the energy of electrons into visible light.

PLANAR TUBE—An electron tube, constructed with parallel electrodes and a ceramic envelope, which is used at uhf frequencies. It is commonly referred to as lighthouse tube.

PLATE DISSIPATION—The amount of power lost as heat in the plate of a vacuum tube.

PLATE RESISTANCE—The plate voltage change divided by the resultant plate current change in a vacuum tube, all other conditions being fixed.

POWER PENTODE—A special-purpose tube used to provide high-current gain or power amplification. Each grid wire is directly in line with the one before and after it, a fact that allows more electrons to reach the plate.

POWER SUPPLY—A unit that supplies electrical power to another unit. It changes ac to dc and maintains a constant voltage output within limits.

QUIESCENCE—The operating condition of a circuit when no input signal is being applied to the circuit.

RECTIFIER—A device which, by its construction characteristics, converts alternating current to a pulsating direct current.

REGULATOR—The section in a basic power supply that maintains the output of the power supply at a constant level in spite of large changes in load current or in input line voltage.

REMOTE-CUTOFF TUBE—An electron tube in which the control grid wires are farther apart at the centers than at the ends. This arrangement allows the tube to amplify large signals without being driven into cutoff. This tube is also called a **VARIABLE**-mu tube.

rgk—The symbol used to express the resistance between the grid and the cathode of an electron tube.

rpk—The symbol used to represent the variable resistance between the cathode and the plate of a tube.

RIPPLE FREQUENCY—The frequency of the ripple current. In a full-wave rectifier, it is twice the input line frequency.

RIPPLE VOLTAGE—The alternating component of unidirectional voltage. (This component is small compared to the direct component).

SATURATION—The point in a tube where a further increase in plate voltage no longer produces an increase in plate current. At this point the upper limit of the conduction capabilities of the tube has been reached.

SECONDARY EMISSION—The liberation of electrons from an element, other than the cathode, as a result of being struck by other high-velocity electrons.

SCREEN GRIN—A grid placed between a control grid and the plate and usually maintained at a positive potential.

SELF-BIAS—The voltage developed by the flow of vacuum-tube current through a resistor in a grid or cathode lead.

SHARP-CUTOFF TUBE—The opposite of a remote-cutoff tube. An electron tube which has evenly spaced grid wires. The amplification of the sharp-cutoff tube is limited by the bias voltage and characteristics.

SPACE CHARGE—An electrical charge distributed throughout a volume or space.

TETRODE TUBE—A four-electrode electron tube containing a plate, a cathode, a control grid, and a screen grid.

THERMIONIC EMISSION—Emission of electrons from a solid body as a result of elevated temperature.

THYRATRON TUBE—A gas-filled triode in which a sufficiently large positive pulse applied to the control grid ionizes the gas and causes the tube to conduct, after which the control grid has no effect in conduction.

TRANSCONDUCTANCE—A measure of the change in plate current to a change in grid voltage with the plate voltage held constant. Transconductance (gm) is usually expressed in micromhos or millimhos. Mathematically,

$$gm = \frac{I_p}{E_s}$$

TRANSIT TIME—The time an electron takes to cross the distance between the cathode and the plate.

TRIODE TUBE—A three-electrode electron tube containing a plate, a cathode, and a control grid.

VARIABLE- μ -TUBE—Same as remote-cut off tube.

VERTICAL DEFLECTION PLATES—A pair of parallel electrodes in a CRT that moves the electron beam up and down.

VOLTAGE GAIN—Ratio of voltage across a specified load.

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